

SCENARIO EDITING DEVICE
CAPABLE OF AUTOMATICALLY SUPPLEMENTING SCENARIO
ON THE BASIS OF RECEIVED ADDITIONAL DATA

BACKGROUND OF THE INVENTION:

This invention relates to a scenario editing device which is for editing a scenario of multimedia contents.

The multimedia contents include a plurality of materials represented by multimedia data. The multimedia data includes at least one data set such as an image data set (or still picture data set), a video data set (or moving picture data set or animation data set), an audio data set, or a text data set. A scenario defines a concrete form of presenting or exhibiting the multimedia contents. In other words, the scenario defines displaying position and timing of text and images and reproducing audio and video. The multimedia contents is provided to a computer with a recording medium such as a CD-ROM or through a computer network such as an internet. Then, the multimedia contents is presented or exhibit to clients with the computer.

As is easily understood from the description mentioned above, the scenario is necessary to present or exhibit the multimedia contents to the clients.

A conventional scenario editing device produces and edits the scenario in response to instructions given by an operator.

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SUMMARY OF THE INVENTION:

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According to the gist of this invention, the scenario editing device comprises a scenario memory for memorizing the

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of memorizing, in a scenario memory, a scenario of multimedia contents which include a plurality of materials represented by data sets, memorizing, in a scenario rule memory, a scenario basic rule which defines specifications of a complete state of the multimedia contents, receiving, by a receiving unit, an additional data set which represents an additional material necessary to complete the multimedia contents, and supplementing, at a scenario supplementing unit, the scenario according to the scenario basic rule so that the additional material is included in the multimedia contents to make the multimedia contents approach the complete state.

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BRIEF DESCRIPTION OF THE DRAWING:

Fig. 1 is a block diagram of a conventional scenario editing device;

Fig. 2 is a flow chart for describing an operation of the conventional scenario editing device of Fig. 1;

Fig. 3 is a block diagram of a scenario editing device of a preferred embodiment of this invention;

Figs. 4A and 4B show an example of a complete state of multimedia contents;

Figs. 5A and 5B show an example of an incomplete multimedia contents;

Figs. 6A, 6B, and 6C show a form of a scenario memorized in a scenario memory;

Fig. 7 shows a form of a scenario basic rule memorized in scenario rule memory;

Fig. 8 shows a form of a scenario complete degree information;

Figs. 9A and 9B show the incomplete multimedia contents presented by the WWW browser;

Fig. 10 shows an example of an electronic mail sent from a client:

Fig. 11 show a form of a supplier information memorized in supplier information memory;

Figs. 12A, 12B, 12C, and 12D show an example of supplemented scenario;

Fig. 13 shows a renewed scenario complete degree information; and

Figs. 14A and 14B show supplemented multimedia contents.

DESCRIPTION OF THE PREFERRED EMBODIMENT:

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Referring to Figs. 1 and 2, description will be at first directed to a conventional scenario editing device for a better understanding of this invention. The scenario editing device is used for producing and editing a scenario which defines presenting positions and timing of multimedia contents formed by materials represented by multimedia data in response to instructions given by an operator.

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In Fig. 1, the conventional scenario editing device comprises an input/output unit 101 which receives commands and the multimedia data from the operator. The multimedia data are, for example, image data sets, video data sets, text data sets, and audio data sets. The commands are for given the instruction to the scenario editing device. A multimedia data memory 102

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 memorizes the multimedia data. A scenario editing unit 103 produces and edits the scenario on the basis of the multimedia data in response to the commands. A scenario memory 104 memorizes the scenario. A scenario expanding unit 105 expands the scenario which includes a sub-scenario to edit the scenario. A data control unit 106 is connected to the input/output unit 101, the multimedia data memory 102, the scenario editing unit 103, the scenario memory 104, and the scenario expanding unit 105 to control flows of the commands, the multimedia data and the scenario. A work memory 107 is connected to the scenario editing unit 103, the scenario expanding unit 105, and the input/output unit 101 to temporarily store the scenario.

The scenario editing device operates as shown in Fig. 2 when a command is supplied from the operator to the input/output unit 101.

At the step S201, the input/output unit 101 decides whether the received command relates to the multimedia data or the scenario. When the received command relates to the multimedia data, the input/output unit 101 receives the multimedia data from the operator at the step S202 and transmits the multimedia data to the multimedia data memory 102 through the data control unit 106. The multimedia data memory 102 memorizes the multimedia data transmitted from the input/output unit 101 at the step S203.

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 On the other hand, when the received command relates to the scenario, the input/output unit 101 judges substance of the received command at the step S204.

If the received command instructs the scenario editing device to produce the scenario, the input/output unit 101 orders the data control unit 106 and the scenario editing unit 103 to produce the scenario. When the data control unit 106 receives the scenario producing order from the input/output unit 101, it reads out the multimedia data from the multimedia data memory 102 and transmits the multimedia data to the scenario editing unit 103. The scenario editing unit 103 receives the multimedia data from the data control unit 106 and produces the scenario at the step S205. In this event, the scenario editing unit 103 receives the commands given from the operator through the input/output unit 101. Then, the scenario editing unit 103 transmits the produced scenario to the scenario memory 104 through the data control unit 106. The scenario memory 104 memorizes the produced scenario supplied from the scenario editing unit 103.

Sub 11 If the received command instructs the scenario editing device to edit the scenario memorized in the scenario memory 104, the input/output unit 101 orders the data control unit 106 and the scenario editing unit 103 to edit the scenario. When the data control unit 106 receives the scenario editing order from the input/output unit 101, it reads out the scenario from the scenario memory 104 and transmits the scenario to the scenario editing unit 103. The scenario editing unit 103 receives the scenario from the data control unit 106 and edits the scenario in response to the commands given by the operator at the step S206. Then, the scenario editing unit 103 transmits the edited scenario to the scenario memory 104 through the data

AH control unit 106. The scenario memory 104 memorized the edited scenario.

If the received command instructs the scenario editing device to expand the scenario memorized in the scenario memory 104, the input/output unit 101 orders the data control unit 106 to expand the scenario. When the data control unit 106 receives the scenario expanding order from the input/output unit 101, it reads out the scenario from the scenario memory 104 and transmits the scenario to the scenario expanding unit 105. The scenario expanding unit 105 receives the scenario from the data control unit 106 and expands the scenario at the step S207. Then, the scenario expanding unit 105 stores the expanded scenario into the work memory 107. The scenario editing unit 103 can edit the expanded scenario stored in the work memory 107.

As mentioned above, the conventional scenario editing device produces and edits the scenario on the basis of the previously provided multimedia data in response to the commands supplied from the operator. Such a scenario editing device is disclosed in Japanese Unexamined Patent Publication (JP-A) No. 8-305720.

Sub A12 By the way, it is desired to automatically edit or supplement the scenario of multimedia contents when the scenario editing device receives additional multimedia data which is necessary to complete the multimedia contents. For example, there is a case where a teacher presents or exhibits incomplete multimedia contents to his/her students using a temporary scenario through a computer network and requests the students to supply the additional multimedia data for

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Referring to Figs. 3 through 14, the description will proceed to a scenario editing device according to a preferred embodiment of this invention. The scenario editing device is realized with, for example, a personal computer which is connected to a computer network such as an internet. In other words, the scenario editing device is realized a program which can be read and executed by the personal computer.

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a mouse. The input device may be a combination of the keyboard, the mouse, and so on. The input device 301 is operated by an operator to input commands. The commands instructs the scenario editing device to receive multimedia data representative of materials of multimedia contents, to delete disused multimedia data, and to designate presenting or exhibiting positions and timing of the materials. The multimedia data includes an audio data set, a video data set, an image data set, and a text data set. An output device 302 is, for example, a display unit and displays the multimedia data, the multimedia contents, and necessary information for the inputting operation for the input device 301. An input/output control unit 303 is connected to the input device 301 and the output device 302 to control signals supplied from the input device 301 and other signals supplied to the output device 302. When the input/output control unit 303 receives the commands from the input device 301, it produces operating information. A scenario editing unit 304 is connected to the input/output control unit 303 to produce and edit a scenario of the multimedia contents on the basis of the operating information supplied from the input/output control unit 303. A scenario memory 305 is connected to the scenario editing unit 304 to memorize the scenario produced and edited by the scenario editing unit 304 together with the multimedia data relating to the scenario. A scenario rule editing unit 306 is connected to the input/output control unit 303 to produce and edit a scenario basic rule on the basis of the operating information supplied from the input/output control unit 303. The scenario basic rule is used

for automatically supplementing the scenario. A scenario rule memory 307 is connected to the scenario rule editing unit 306 to memorize the scenario basic rule produced and edited by the scenario rule editing unit 306. A scenario analyzing unit 308 is connected to the scenario memory 305 and the scenario rule memory 307 and analyzes the scenario memorized in the scenario memory 305 with referring to the scenario basic rule memorized in the scenario memory 307 to produce a scenario complete degree information. The scenario complete degree information includes a scenario complete rate information representative of a complete rate of the multimedia contents and a lacking data list representative of lacking data sets for a complete state of the multimedia contents. A scenario complete degree memory 309 is connected to the scenario analyzing unit 308 to memorize the scenario complete degree information. A scenario converting unit 310 is connected to the scenario memory 305, the scenario rule memory 307, and the scenario complete degree memory 309. The scenario converting unit 310 converts the scenario memorized in the scenario memory 305 into an exhibiting electronic document with referring to the scenario basic rule memorized in the scenario memory 307 to exhibit an incomplete multimedia contents. The incomplete multimedia contents includes the scenario complete degree information memorized in the scenario complete degree memory 309. A connecting unit 311 is connected to the scenario converting unit 310 and the computer network and exhibits the incomplete multimedia contents on the computer network to present the incomplete multimedia contents to clients through the computer network.

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The scenario converting unit 310 and the connecting unit 311 are called a presenting section for presenting the multimedia contents to the clients. An additional data receiving unit 312 is for receiving an additional data set and supplier information from the clients. The additional data receiving unit 312 includes, for example, a email receiving client software, a floppy disk drive for a floppy or flexible magnetic disk, an optical disk drive for an optical disk or a optical magnetic disk, a memory reader for a semiconductor memory, a modem or a terminal adapter connected to the computer network, or a scanner for scanning a printed matter. A scenario supplementing unit 313 is connected to the scenario memory 305, the scenario rule memory 307, and the additional data receiving unit 312 and produces an additional scenario according to the scenario basic rule memorized in scenario rule memory 307 and the additional data set received by the additional data receiving unit 312 to supplement the scenario memorized in the scenario memory 305 with the additional scenario. Moreover, the scenario supplementing unit 313 adds the additional data set received by the additional data receiving unit 312 to the multimedia data memorized in the scenario memory 305. An supplier information memory 314 is connected to the additional data receiving unit 312 and the connecting unit 311 and memorized the supplier information received by the additional data receiving unit 312 to supply the supplier information to the connecting unit 311.

An operation of the scenario editing device is described soon with referring to Figs 4 to 14 together with Fig. 3.

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Next, the operator makes temporary multimedia contents which lacks a part of the materials of the complete multimedia contents. When all of the materials is not gathered, the operator makes the temporary multimedia contents. Moreover, the operator makes the temporary multimedia contents so that the clients tries to gather the lacking materials.

The input/output control unit 303 produces the operating information in response the commands supplied from the input device 301 and supplies the operating information to the scenario editing unit 304.

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Next, the operator inputs necessary information for the scenario basic rule at the scenario rule editing unit 306. The scenario rule editing unit 306 receives the information from the input device 301 through the input/output control unit 303 and produces the scenario basic rule. The scenario rule memory 307 memorizes the scenario basic rule made at the scenario rule editing unit 306.

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When the scenario complete degree information is stored in the scenario complete degree memory 309, the scenario converting unit 310 reads out the scenario from the scenario memory 305 and recognizes that the data table 001 corresponds to the scenario of the table of the contents on the basis of the main table of Fig. 6A. Furthermore, the scenario converting unit 310 reads out the scenario complete degree information from the scenario complete degree memory 309 and specifies the lacking pages on the basis of the lacking data list included in the scenario complete degree information. In addition, the

The connecting unit 311 is, for example, a modem and uploads the exhibiting electronic document and the multimedia data to, for example, a WWW server connected to the internet. Thus the multimedia contents exhibits on the computer network and present them to the clients.

Each of the client can watch the table of the contents by the use of a WWW browser and can watch the content page by the clicking the link button. For example, the www browser shows the table of the contents and the content page as illustrated in Fig. 9A and 9B, respectively.

The connecting unit 311 further checks the supplier information memory 314. If an electronic mail address is included in the supplier information memorized in the supplier information memory 314, the presenting unit 311 send an email to request the lacking multimedia data.

Now, it is assumed that one of the clients sent an email as shown in Fig. 10 to the scenario editing device.

The additional data receiving unit 312 receives the email and analyze the email. The additional data receiving unit 312 picks out a picture (i.e. an image data set) and its caption (i.e. a text data set) from the email and recognizes that the picture shows a landscape of the spot A in 1990. The picture and the caption is supplied to the scenario supplementing unit 313 together with the recognized information. Moreover, the additional data receiving unit 312 picks out the supplier information, receiving date information, source address of the email and stores these information into the supplier information memory 314. The supplier information memory 314 memorizes the supplier information as shown in Fig. 11.

When the scenario supplementing unit 313 receives the additional data sets representing the picture and the caption, it refers to the scenario basic rule memorized in the scenario rule memory 307 to produce the additional scenario corresponding to the additional data sets. The scenario supplementing unit 313 further changes the scenario memorized in the scenario memory 305 to incorporate the additional scenario to the memorized scenario. That is, the scenario supplementing unit 313 produces a data table 003 as shown in

When the scenario memorized in the scenario memory 305 is renewed by the scenario supplementing unit 313, the scenario analyzing unit 308 analyzes the renewed scenario and renew the scenario complete degree information memorized in the scenario complete degree memory 309. The renewed scenario complete degree information is shown in Fig. 13. Compared with Fig. 8, "SPOT A, 1990" is erased from the column of the lacking page and the scenario complete rate is changed to 2/16 in Fig. 13.

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The WWW browse can show the renewed table of the contents as shown in Fig. 14A. If the link button relating to the content page of "SPOT A, 1990" is clicked, the WWW browser shows the content page of "SPOT A, 1990" as shown in Fig. 14B. Additionally, if the scenario basic rule includes a rule of "DISPLAY NAME OF SUPPLIER", the content page of the "SPOT A, 1990" includes a sentence of "SUPPLIED BY NICHIDEN TARO". Needless to say, when the link button relating to the content page of "SPOT C, 1980" is clicked, the WWW browser shows the content page of "SPOT C, 1980" as shown in Fig. 9B.

As mentioned above, the scenario editing device automatically renews the scenario memorized in scenario memory 305 whenever additional data sets are supplied from the clients. In addition, the scenario editing device renews the multimedia contents exhibiting on the computer network whenever the scenario is renewed. Thus the scenario editing device automatically enriches the multimedia contents to achieve the complete state of the multimedia contents.

Since the scenario basic rule has no completion condition in above description, the scenario editing device continues the operation forever. Therefore, it is necessary to add a rule for stopping the operation of the scenario editing device to the scenario basic rule memorized in the scenario rule memory 307. The additional rule is as, for example, "If once the content page is made, don't renew the content page.". In this case, the scenario supplementing unit 313 rejects the additional multimedia data relating to the content page which is already made.